

Secondary

D.A.V. Publication Division

ANSWERS ONLY

Mathematics



Class - VI

ANSWERS

CHAPTER 1 – NATURAL NUMBERS AND WHOLE NUMBERS

Do You Remember Numbers?

- (a) 500 (b) hundreds (c) 40000 (d) tens (e) 7 (f) 305078 (g) 204866
- 25000
- $9999000 ; 9 \times 10^6 + 9 \times 10^5 + 9 \times 10^4 + 9 \times 10^3$
- 751, 715, 517, 571, 157, 175
- 406, 604, 460, 640
- (a) Eighty seven lakh fifty one thousand four hundred thirty two. (b) Sixty thousand two.
(c) Four lakh ninety one thousand six hundred three.
(d) Sixty three crore twenty two lakh forty five thousand six hundred eighty seven.
- (a) Five million seven hundred thirty seven thousand eight hundred two.
(b) Four hundred eleven thousand eight hundred nine.
(c) Thirty three million two hundred forty six thousand nine hundred fifty one.
(d) Eight hundred ninety eight million five hundred seventy six thousand four hundred forty nine.
- (a) 32, 004, 329 (b) 39, 48, 09, 088
- 60 lakhs
- 170 millions

Worksheet 1

- (a) XXXIII (b) D (c) XLVIII (d) LXXVI (e) XCV (f) XLI (g) LXXXVII (h) LXVI
(i) XIX (j) M
- (a) 26 (b) 77 (c) 91 (d) 85 (e) 500 (f) 99 (g) 97 (h) 55 (i) 41 (j) 29
- (a) XCIX (b) XLII (c) LXXXIV (d) LXXXI
- (a) (d) (e) (f) (h)
- 545, 2010, 908, 203, 591
- (a) MCMXLVII (b) MCML

Worksheet 2

- (a) 0 (b) No (c) 0 (d) 4 (e) 100000 (f) 1000005 (g) Left (h) Right
- (a) 45639 (b) 10010 (c) 220210 (d) 4226373
- (a) 33800 (b) 99999 (c) 6698978 (d) 80115669
- 648000 ; 648001 ; 648002
- 552001 ; 552000 ; 551999
- (a) > (b) > (c) > (d) <
- 34, 43, 287, 833, 15769, 49538, 798665
- 560832, 422596, 38675, 3951, 1024, 977, 67
- 9999983
- 400005

Worksheet 3

- (a) 1794 (b) 163 (c) 111 (d) 561 (e) 3303 ; 1020 (f) 268 (g) 469 (h) 0 (i) 0
- | | | | | | | | |
|-----|--|-----|---|-----|---|-----|---|
| (a) | $\begin{array}{r} 29422 \\ - 6875 \\ \hline 22547 \end{array}$ | (b) | $\begin{array}{r} 47805 \\ + 36334 \\ \hline 84139 \end{array}$ | (c) | $\begin{array}{r} 23968 \\ + 119801 \\ \hline 143769 \end{array}$ | (d) | $\begin{array}{r} 80019 \\ - 54316 \\ \hline 25703 \end{array}$ |
|-----|--|-----|---|-----|---|-----|---|
- 1079557; Yes
- (a) 1342 (b) 2500 (c) 1500 (d) 3000 (e) 1908 (f) 3900
- (a) 12430 (b) 37419 (c) 30179 (d) 6190
- 5779 students
- ₹ 4,18,915
- ₹ 1,35,788
- ₹ 38,419
- 11153 trousers

Worksheet 4

- (a) 0 (b) 741 (c) 27 (d) 581 (e) 1 (f) 0 (g) 0
- ₹ 1,262.50
- 12933 books
- ₹ 2,52,072

Worksheet 5

- (a) 63 : 52 (b) 88 : 43 (c) 36 : 16 (d) 100 (e) 5
- (a) 488000 (b) 1250000 (c) 10000000 (d) 197500 (e) 1000000 (f) 100000000
- (a) 25787 (b) 64390 (c) 436805 (d) 1404528 (e) 54194 (f) 398601
- (a) 156200 (b) 63800 (c) 1500 (d) 688000 (e) 1000000 (f) 75000
- ₹ 7,69,200 6. ₹ 14,82,551

Worksheet 6

- (a) Q = 79, R = 16 (b) Q = 96, R = 221 (c) Q = 60, R = 15 (d) Q = 262, R = 181
- 20 3. 25 4. 99960 5. 36 soldiers 6. ₹ 2,600

Worksheet 7

- 600 2. 5,500 3. 18,000 4. 1,600 5. 600 6. 5,000 7. 300 8. 7,000

Worksheet 8

- 300 2. 1,20,000 3. 7,000 4. 2,70,000 5. 7,20,000 6. 24,00,000 7. 60,00,000
- 10,40,00,000

Worksheet 9

- 32 2. 0 3. 9 4. 13 5. 18 6. 19 7. 0 8. 80

Value Based Questions

- (a) ₹ 241 (b) Medicines, warm clothes, etc. 2. (a) ₹ 16,625 (b) peepal, neem

Brain Teasers

- A. (a) (ii) (b) (iii) (c) (i) (d) (ii) (e) (ii)
B. (a) 30 (b) 0 (c) 11,20,000 (d) 1,00,000 (e) 7,99,992
- 9,99,987 3. 10,00,023 ; 55,55,410 4. 90,000 5. 0 6. 55,89

7.

15	10	3	6
4	5	16	9
14	11	2	7
1	8	13	12

- 9,98,873 9. (a) 3,05,000 (b) 99,998

- (a) XCIV (b) XXIV 11. XV, XXIX, LVII, LXIV, LXXI, XC
- (a) 600 (b) 1,000 (c) 18,00,000 (d) 8,00,00,000

HOTS

- 39 2. 14, 25, 36, 47, 58, 69

Enrichment Questions

- $99 + \frac{9}{9}$ 2. 27

CHAPTER 2 – FACTORS AND MULTIPLES

Worksheet 1

- (a) composite numbers (b) prime numbers (c) prime (d) 4 (e) 2 (f) 2 (g) 4 (h) 9 (i) 97
- (c) and (f) are prime numbers 3. 2, 3, 5, 7, 11, 13, 17, 19, 23, 29

4. 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109 5. composite
 6. (a) 25, 50, 75, 100, 125 (b) 17, 34, 51, 68, 85 (c) 100, 200, 300, 400, 500 (d) 41, 82, 123, 164, 205
 7. 60, 75, 90 8. 3480 and 3490 10. (a) and (c) are coprime

Worksheet 2

1. (a) 6552, 988, 3870 (b) 9765, 1000, 28775 (c) 7780, 10000, 82210 (d) 4924, 36572
 (e) 789984, 365832

Worksheet 3

1. (a) 4203324, 12342 (b) 3437712, 9811602 (c) 8502153, 46627207 2. (a), (b)
 3. (a) divisible by 3 but not by 9 (b) divisible by 3 and 9 (c) divisible by 3 and 9
 4. (b), (d), (e) and (f) are divisible by 11 5. (a) 2, 3 (b) 3, 5 (c) 3, 2 (d) 4, 3 (e) 0
 6. (a) 4 (b) 6 (c) 1 (d) 5 7. (a) False (b) True (c) True (d) True (e) False

Worksheet 4

1. (a) $2 \times 3 \times 13$ (b) $2^3 \times 3 \times 5$ (c) 2^8 (d) $2^2 \times 3 \times 7$ (e) $3^2 \times 7^2$ (f) $2^4 \times 3 \times 5$
 (g) $2^8 \times 3^2$ (h) 5^5 (i) $2^2 \times 3^2 \times 5 \times 7$
 2. 9999 : $3^2 \times 11 \times 101$ 3. 1000 : $2^3 \times 5^3$ 4. (a) $5 + 13$ (b) $3 + 29$ (c) $5 + 61$ (d) $7 + 83$
 5. (a) $3 + 7 + 31$ (b) $3 + 7 + 13$ (c) $3 + 11 + 61$ (d) $3 + 13 + 43$

Worksheet 5

1. (a) 1 (b) 6 (c) 7 2. (a) 4 (b) 4 (c) 2
 3. (a) 23 (b) 24 (c) 41 (d) 13 (e) 101 (f) 69 (g) 35 (h) 45 4. (a) 1 (b) 2 (c) 1 (d) 1
 5. 33 6. 10 7. 75 cm 8. 52 toffees

Worksheet 6

1. (a) 36 (b) 20 (c) 75 2. (a) 30 (b) 144 (c) 600
 3. (a) 180 (b) 720 (c) 720 (d) 192 (e) 3185 (f) 300 (g) 144 (h) 720
 4. 605 5. 500 km 6. 9 p.m.

Worksheet 7

2. (a) 9, 270 (b) 29, 1160 (c) 13, 1989
 3. No, because 16 is not a factor of 380 4. 192 5. 36 6. 32
 7. (a) False (b) False (c) True (d) True (e) True

Value Based Questions

1. (a) 54 (b) leadership qualities, helping the needy, (c) to maintain discipline in school
 2. (a) 3 : 40 p.m. (b) carpool, using CNG vehicles, etc.

Brain Teasers

1. A. (a) (iv) (b) (iii) (c) (i) (d) (i) (e) (i)
 B. (a) 12 (b) 9 (c) $71 + 61$ (d) 2 (e) 5
 2. No, because their HCF is not 1 4. $3^3 \times 37$ 5. $2^4 \times 5^4$ 6. (a) 7. (a)
 8. (a) 2 (b) 1 9. (a) 8 (b) 4 10. 9 12. 58
 13. 5940 14. 221 15. No, because 15 is not a factor of 350

HOTS

9900

CHAPTER 3 – INTEGERS

Worksheet 1

1. (a) + 500 (b) - 90 (c) + 10 (d) - 500 (e) + 5 (f) + 3 (g) - 10 (h) + 25
2. (a) Withdrawing ₹ 1,000 from a bank account (b) Increase of 5 marks (c) Spending ₹ 200
(d) Going 2 km towards west (e) 2 steps to the right of zero on number line
3. - 59, - 1, - 4, - 62
(f) Gaining weight of 7 kg

Worksheet 2

2. (a) 3 (b) 0 (c) - 4 (d) 14 (e) - 8 (f) 7 3. (a) - 4, - 3, - 2, - 1 (b) - 3, - 2, - 1, 0, 1, 2
(c) - 10, - 9, - 8, - 7, - 6, - 5, - 4, - 3, - 2, - 1, 0 (d) - 5, - 4, - 3, - 2
4. (a) > (b) < (c) > (d) < (e) > (f) > (g) > (h) < (i) > (j) < 5. 17, 18, 0, 43, 21, 105, 61, 1283
6. (a) - 21, - 11, - 5, 4, 16, 50 (b) - 30, - 16, - 12, - 1, 0, 7
7. (a) 103, 77, 26, - 43, - 105, - 171 (b) 93 9. 0, - 8, - 75, - 79
8. (a) False (b) True (c) True (d) False (e) False (f) True (g) True (h) False

Worksheet 3

3. (a) 18 (b) - 314 (c) - 130 (d) - 1 (e) 900 (f) - 1000 (g) 386 (h) 36 (i) - 8645 (j) 0

Worksheet 4

1. (a) 18 (b) - 160 (c) - 36 (d) - 50 2. (a) - 31 (b) 7 (c) - 21 (d) 501 (e) 0 (f) 34
3. (a) 59 (b) 0 (c) - 100 (d) - 108 (e) 1 (f) 100 (g) - 150 (h) - 100
4. (a) 3 (b) 0 (c) - 16 (d) 5, 6 (e) 0 (f) 0
5. (a) False (b) True (c) False (d) True (e) False (f) False (g) False (h) False

Worksheet 5

1. (a) 3 (b) - 5 (c) - 100 (d) 91 (e) - 108 (f) 2004
2. (b) - 7 (c) 2 (d) - 6 (e) 19 (f) - 26 (g) - 64 (h) - 8 (i) 6 (j) 100
3. (a) - 5 (b) 13 (c) - 17 (d) 5 (e) - 16
(f) - 1800 (g) - 721 (h) - 565 (i) 591 (j) - 15210
4. 9, - 9, No 5. 73 6. - 89 7. (a) > (b) <
8. (a) 16 (b) 15 (c) 84 (d) - 100 (e) - 23 (f) 45

Worksheet 6

1. (a) - (b) - (c) + (d) - (e) - (f) + (g) - (h) -
2. (a) - 30 (b) 57 (c) - 60 (d) 32 (e) + 5000 (f) 400 (g) 336 (h) - 1 (i) - 840 (j) 0
3. (a) 567000 (b) 73900 (c) 7000 (d) - 8610 (e) - 32600 (f) - 24200
4. (a) 3 (b) - 19 (c) 0 (d) - 74 (e) 69 (f) 100 5. (a) > (b) >
6. (a) negative (b) positive (c) negative (d) positive (e) negative
7. (a) True (b) False (c) False (d) False

Worksheet 7

1. (a) - (b) + (c) - (d) - (e) + (f) + (g) - (h) -
2. (a) - 4 (b) - 25 (c) 215 (d) - 22 (e) - 9 (f) 0 (g) - 30 (h) + 12 (i) - 3 (j) + 121
3. (a) 1 (b) - 17 (c) 0 (d) - 42 (e) - 65

Worksheet 8

1. (a) Five square (b) Nine to the power of five (c) Seven to the power of three

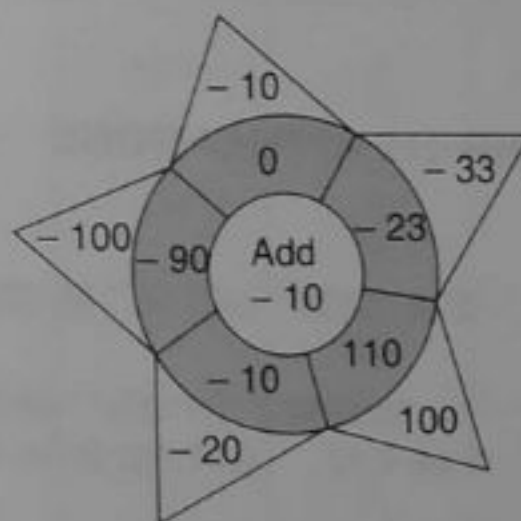
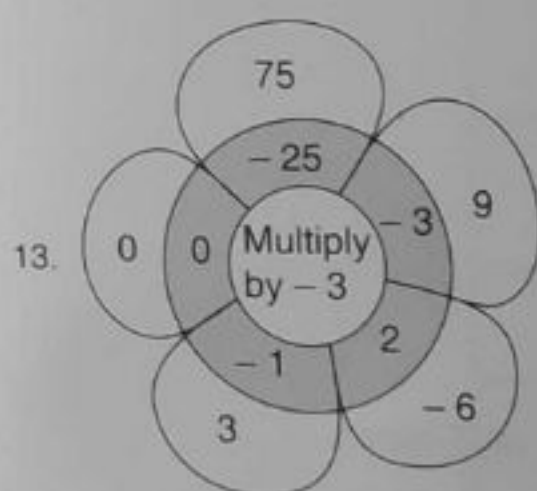
- (d) Minus two to the power of four (e) Minus ten to the power of three
 (f) Minus one to the power of eighteen
2. (b) 9, 3 (c) -3, 4 (d) -1, 6 (e) 20, 2 (f) -10, 7
3. (a) 4^3 (b) $(-2)^4$ (c) 5^5 (d) $(-10)^8$ (e) $(-11)^3$ (f) $(-1)^{30}$
4. (a) $2 \times 2 \times 2 \times 2 \times 2$ (b) $3 \times 3 \times 3 \times 3$ (c) $(-7) \times (-7) \times (-7)$ (d) $(-12) \times (-12)$
5. (a) 81 (b) 25 (c) 1 (d) 1331 (e) -64000 (f) 2500
6. (a) -729 (b) 225 (c) -100000 (d) -1 7. (a) 25 (b) -8 (c) 36 (d) -910 (e) 35 (f) 2
8. 16 10. (a) False (b) True (c) True (d) False (e) False (f) True (g) False (h) False (i) False (j) True
11. (a) fifth (b) third (c) fifth (d) third

Value Based Questions

1. (a) +65 (b) sharing lunch 2. (a) 38 (b) She is sincere, truthful

Brain Teasers

1. A. (a) (iii) (b) (i) (c) (iii) (d) (ii) (e) (iv) B. (a) -105, -200 (b) 23 (c) 9 (d) -15 (e) 0
2. (a) -200 (b) -5 (c) +3 (d) +40
3. (a) India lost the match by 3 wickets (b) Mohan deposited ₹ 2,500 in his bank account
4. (a) -30, -50, -60, (b) -190, -100, 5 5. -104, -96, -69, -48, -7, 5, 13, 48
7. (a) -800 (b) -425 8. (a) 9 (b) 0 9. (a) 12 (b) -325000 (c) -1800000 10. <
11. (a) 16 (b) positive (c) -6 (d) -168 (e) -250 (f) -2, -7 (g) -6 (h) less (i) -14, -21
12. (a) False (b) False (c) True (d) False (e) True



HOTS

1. (a) -90 (b) (i) 0 (ii) 5 2. (a) gain of ₹ 3,80,000 (b) 4000 bags

CHAPTER 4 – RATIO, PROPORTION AND UNITARY METHOD

Worksheet 1

1. (a) 3 : 5 (b) 13 : 17 (c) 49 : 36 (d) 1000 : 537 (e) 91 : 92 (f) 1 : 49 (g) 15 : 1 (h) 42 : 13
2. (a) 4 : 7 (b) 3 : 8 3. (a) 9 : 4 (b) 25 : 7 (c) 9 : 4 (d) 5 : 7 (e) 1 : 9 (f) 5 : 4
4. (a) 1 : 100 (b) 3 : 16 (c) 5 : 3 (d) 6 : 5 (e) 14 : 3 (f) 16 : 1
5. (a) 4 : 5 (b) 11 : 9 (c) 23 : 24 (d) 15 : 40 6. 12 : 13 7. 3 : 1 8. (a) 4 : 3 (b) 1 : 3
9. (a) 19 : 16 (b) 16 : 35 10. (a) 10 : 1 (b) 9 : 1 11. (a) 12 : 125 (b) 125 : 12
12. (a) Ratio (b) Simplest (c) 11, 24 (d) 2 : 11 (e) 12 : 13

Worksheet 2

1. (a) Yes (b) No (c) Yes (d) No (e) Yes (f) No
2. (a) 64 (b) 18 (c) 20 (d) 4 3. (a) No (b) Yes (c) Yes (d) No
4. (a) 54 (b) 16 (c) 16 (d) 80 5. (a) No (b) Yes (c) Yes (d) No
6. (a) proportion (b) 4 (c) extreme terms (d) second and third (e) means, extremes

Worksheet 3

1. ₹ 405 2. ₹ 9,025 3. ₹ 1,87,500 4. ₹ 1,200 5. ₹ 30
6. (a) ₹ 8,400 (b) 3 months 7. (a) 10 kg (b) 48 books 8. (a) 15, 440 screws (b) 18 days

Value Based Questions

1. (a) ₹ 180 (b) ₹ 30 (c) honesty 2. (a) 3 : 4 (b) 4 more trees (c) by planting more trees

Brain Teasers

1. A. (a) (ii) (b) (i) (c) (i) (d) (iii) (e) (iv)
B. (a) 2 : 5 (b) 160 kg (c) 3 : 4 (d) 1 : 40 (e) 30
2. (a) 40 : 1 (b) 160 : 1 (c) 1 : 4 (d) 10 : 1 3. (a) Yes (b) No
4. (a) 128 (b) 100 5. 19 : 18 6. (a) 13 : 7 (b) 10 : 13 (c) 7 : 30
7. (a) ₹ 75 (b) 16 oranges 8. ₹ 855 9. (a) 11 : 10 (b) 8 : 11 10. 25 : 49 11. 800 km

HOTS

8.4 m

CHAPTER 5 – PERCENTAGE AND ITS APPLICATIONS

Do You Remember?

1. (b) $\frac{8}{125}$ (c) $\frac{2}{5}$ (d) $\frac{1}{3}$ 2. (b) 0.035 (c) 1.35 (d) 0.03
3. (b) 625% (c) 1250% (d) 25% 4. (b) 35% (c) 25% (d) 22%
5. (b) 163% (c) 4.5% (d) 10% 6. (a) ₹ 16 (b) ₹ 262.50 (c) 6 km (e) 5 pencils
7. 34 marks 8. 1 litre

Worksheet 1

1. (a) 70% (b) $33\frac{1}{3}\%$ (c) $6\frac{2}{5}\%$ (d) 200% (e) 25% (f) 60%
2. $62\frac{1}{2}\%$ 3. 12.5% 4. 40% boys 5. Mansi got 82%, Neha got 89%, Neha's performance is better
6. 40%

Worksheet 2

1. (a) ₹ 127.20 (b) ₹ 340 2. ₹ 1,007 3. ₹ 88,000 4. 144 litres 5. ₹ 400

Worksheet 3

1. (a) 20% gain (b) $6\frac{1}{4}\%$ loss (c) $13\frac{1}{3}\%$ gain (d) 15% loss 2. $16\frac{2}{3}\%$ 3. 8% profit 4. $33\frac{1}{3}\%$

Worksheet 4

1. (a) ₹ 120

(b) ₹ 975

(c) ₹ 88, ₹ 1,368

(d) ₹ 429, ₹ 3,029

2. ₹ 468

3. ₹ 45

4. ₹ 1,760

5. ₹ 250

6. ₹ 6,400, ₹ 6,200

Worksheet 5

1. ₹ 26

2. ₹ 1,524

3. ₹ 4,540.50

4. ₹ 63

Value Based Questions

1. (a) ₹ 52,000

(b) Donating clothes, blankets

2. (a) 39 blankets (b) food packets, medicines

Brain Teasers

1. A. (a) (ii)

(b) (iii)

(c) (i)

(d) (iv)

(e) (ii)

B. (a) ₹ 630

(b) ₹ 5

(c) 20%

(d) 6 cm

(e) 30%

2. (a) 3004

(b) 25 gm

3. 14 hrs

4. 50% gain

5. ₹ 27.50

6. ₹ 20,100

7. ₹ 28.50

8. $66\frac{2}{3}\%$

9. ₹ 1,125

10. ₹ 136

HOTS

1. $33\frac{1}{3}\%$

2. 26 boys

3. 25%

4. 5801

Enrichment Question

$\frac{8}{5}$	30%	$\frac{2}{10}$	1.3
30%	1.0	$1\frac{3}{10}$	80%
1.1	0.6	50%	1.2
40%	1.5	$\frac{7}{5}$	10%

CHAPTER 6 – INTRODUCTION TO ALGEBRA

Worksheet 1

1. (a) $x + 5$ (b) $y - 3$ (c) $2z$ (d) $\frac{1}{3}x$ (e) $(a + b) + 4$

2. (a) $y + x$ (b) $m + 2$ (c) $x + y + z$ (d) $3q + 2p$ (e) $\frac{1}{3}(a + b)$ (f) $x - 4$ (g) $4 - x$

(h) $2q - p$ (i) $3x$ (j) $x + \frac{1}{5}y$ (k) $5(x + y)$ (l) $\frac{a}{6}$ (m) $\frac{x}{5}$ (n) $\frac{1}{2}(p + q)$

3. (a) 5 more than x (b) 3 less than y (c) Two-third of a number x (d) 4 times z

(e) Quotient of x by y (f) Twice a number a added to thrice a number b

4. $(38 + x)$ students 5. $(x + y + z)$ cm 6. ₹ 8y 7. $(x + 7)$ toffees 8. $(z - 3)$ yrs.

Worksheet 2

1. y 2. $5b, 2c$ 3. $5y$ 4. $3x$ 5. $2p$ 6. 0 7. 1 8. $-4x$ 9. $2y, z$ 10. $2q, r$

Worksheet 3

1. (a) y^2 (b) p^{21} (c) $\frac{1}{2}ab^2c$ (d) $2a^3b^2c$ (e) $-6xy^2z$ (f) $(-z)^4$ (g) $(-a)^{17}$ (h) $(3x)^5$
2. (a) $y \times y \times y \times y \times y$ (b) $x \times x \times x \dots\dots\dots 19$ times (c) $\frac{3}{4} \times x \times x \times x \times y \times z$
- (d) $a \times a \times a \times b \times b \times c$ (e) $(-a) \times (-a) \times (-a) \times (-a)$ (f) $2x \times 2x \times 2x$
 (g) $(-z) \times (-z) \times \dots\dots 30$ times (h) $-7 \times p \times q \times q \times r \times r \times r$
3. $(3x)^3 = 3x \times 3x \times 3x$; $3x^3 = 3 \times x \times x \times x$. They are not same.
4. (a) 2 (b) -9 (c) $4x$ (d) $-8ac$ (e) -1 (f) $\frac{4}{3}$ (g) $4y$ (h) 1 (i) $-\frac{1}{2}b^2$ (j) y
5. (a) Constant (b) Constant (c) Variable (d) Constant
 (e) Variable (f) Variable (g) Constant (h) Constant
6. (a) 2 (b) 3 (c) $\frac{1}{4}$ (d) 1 (e) -1 (f) 3 (g) $\frac{4}{3}$ (h) 1 (i) -1 (j) -1

Worksheet 4

1. (a) $x^2, -2xy, y^2$ (b) $5a^2, 6ab, -2b^2, 3$ (c) $p^2, q^3, r^3, -3pqr$ (d) $x, y, -z, -xyz, 5$
- (e) $5x^2y, -5xy^2$ (f) $2x, -3y^2, \frac{1}{5}x^2, -\frac{2}{3}y$
2. Monomial $\rightarrow b, d, g, h$
 Binomial $\rightarrow a, f, k$
 Trinomial $\rightarrow c, i, l$
 Quadrinomial $\rightarrow e, j$
3. No, because $4x$ and $2x$ are like terms. A trinomial expression has three unlike terms.
4. (a) $x^2, \frac{1}{2}x^2$ (b) $p, 4p$ (c) $-2ab, 3ba$ (d) $x^2yz, -4yx^2z$
- (e) $-11pq, qp$ (f) $-a, 7a, a$ (g) $2a^3b^2c, b^2a^3c$ (h) $-2x^2y, 2yx^2$
5. (a) $2a + 3b - 2c$ (b) $4x^2y - 2xy^2 - 3$ (c) $x - y - z - 3$

Worksheet 5

1. (a) $10x$ (b) $-a$ (c) $6abc$ (d) $10xy$ (e) $-8a + 12b$ (f) $7a - 2b + 3c$
2. (a) $10a + 6b$ (b) $5x^2 + 4y^2$ (c) $-x - 13y$ (d) $3x + 10y + 3xy$
 (e) $2a + 4b - 2c$ (f) $3x^2 + 8y^2 + 2xy$
3. (a) $3x + y$ (b) $4a + b - c - 1$ (c) $2a^2 + 2b^2$ (d) $5xy + 4yz - 2$
 (e) $-2x^2 + 7y^2 - 3xy + 8$ (f) $6pq$

Worksheet 6

1. (a) $2x$ (b) $-a$ (c) $-12x^2$ (d) $4y$ (e) $4a$ (f) $-6abc$
2. (a) $-x + y$ (b) $b^2 - 5a^2$ (c) $-7x^2y + 7xy^2$ (d) $3a + 2b - 7$ (e) $-2p - 2q$ (f) $-2a^3 + 6abc$
3. (a) $2x - 3y - 5z$ (b) $-6x + 7y$ (c) $7p^2 - 6q^2 + 9r - 9$ (d) $2x + 2y$ (e) $7 - 11pqr + 11p$ (f) $-6x^2 + 3x$
4. $-3x - 2y + 5xy$ 5. $3x^2 + x + 1$ 6. $-7b - 3c + 13$

Worksheet 7

1. (a) 12 (b) 1 2. (a) -2 (b) -26 3. (a) 0 (b) 24 4. 0

Value Based Questions

1. (a) $5a^2 + 2b^2 + 4ab$, Total amount ₹ 1,55,000
(b) Helpful to the deprived or Cooperative with others in helping the needy, etc.
2. (a) 11
(b) Environment friendly, etc.

Brain Teasers

1. A. (a) (iii) (b) (ii) (c) (iii) (d) (iii) (e) (i)
B. (a) ₹ (x - 5,000) (b) $10x + x = 11x$ (c) $2p + 3s$ (d) $9q - 3x$ (e) $2x + 3y$
2. (a) $\frac{2}{3}x - 6$ (b) $3(z + 5)$
3. (a) Four-fifth the sum of a and 2 (b) Four-fifth of a number 'a' added to 2
4. (a) $p = 4a$ (b) $\frac{1}{3}y - 2x$ (c) $3x + 4y$ (d) $\frac{x}{10}$
5. (a) $-3 \times p \times p \times p \times q \times q \times r$ (b) $(-y) \times (-y) \times (-y) \times \dots \times (-y)$ 27 times
6. Number of days in December. 7. Degrees in an obtuse angle. [Answers for 6 and 7 may vary]
8. $\left(\frac{2}{3}x\right) \times \left(\frac{2}{3}x\right) \times \left(\frac{2}{3}x\right); \frac{2}{3} \times x \times x \times x$ Not Same.
10. $3p^2, -2p^2, p, -6$ 11. $a^2bc, -ba^2c, cba^2, bca^2, -a^2bc$
12. (a) $-2a + 3b - 5$ (b) $-\frac{3}{2}$ (c) $2.5x^2$ (d) -1 (e) binomial (f) $(-p)^{17}$ (g) $-7x$ (h) $7y$
13. 0
14. Total number of passengers $x + y$
Total fare ₹ $(5x + 10y)$
15. $x + y - 10 - 15 = x + y - 25$

HOTS

1. Volume of new cube $2x^3 + 5y^2 + 10z + 18$.

CHAPTER 7 – LINEAR EQUATIONS

Worksheet 1

1. Left Hand Side (LHS) and Right Hand Side (RHS) 2. One 3. (a), (b), (d), (f)
4.

	LHS	RHS
(a)	$y - 3$	9
(b)	$2x + 1$	5
(c)	$\frac{y}{3}$	9
(d)	$5y - 1$	$9 - 2y$

5. (a) $x + 3 = 5$ (b) $y + 6 = 9$ (c) $x - 2 = 10$ (d) $2p = 12$ (e) $a - 15 = 7$

$$(f) \frac{2}{3}x = 5 \quad (g) 3x - 1 = 4 \quad (h) 6y = 3 + y \quad (i) \frac{1}{3}z - 5 = 5 \quad (j) 2(x + 3) = 14$$

Worksheet 2

- (a) No (b) Yes (c) No (d) Yes (e) No (f) No (g) No (h) Yes (i) No (j) Yes

Worksheet 3

1. 6 2. 15 3. 3 4. 20 5. -3 6. -3 7. -24 8. 12 9. -5 10. 1

Worksheet 4

1. 2 2. 4 3. -2 4. 9 5. -20 6. 4 7. 1 8. 0 9. 3 10. 9 11. 17 12. 65

Worksheet 5

1. 2 2. 100 3. -15 4. 11 5. 8 6. $\frac{6}{7}$

Value Based Questions

1. (a) 175 (b) Social or helpful or respect for elders etc.
2. (a) 30 (b) Social or helpful, etc.

Brain Teasers

1. A. (a) (iv) (b) (ii) (c) (iii) (d) (iv) (e) (iii)
B. (a) 1 (b) $x = -9$ (c) $y = 3$ (d) $p = 4$ is not a solution (e) $x = 3.6$
3. (a) LHS (b) LHS (c) LHS 4. (a) $3x - 5 = 9$ (b) $2x = 3 + x$ (c) $13 - 2x = 5$ (d) $1 + \frac{1}{9}x = 11$
5. (a) 2 (b) 10 (c) 0 (d) 50
6. (a) 3 (b) $\frac{7}{2}$
7. (a) -3 (b) divide (c) 15 (d) 3, 2 (e) one

CHAPTER 8 – BASIC GEOMETRICAL CONCEPTS

Do You Remember?

1. (a) Ray (b) Line segment (c) Line (d) Line segment (e) Ray (f) Line
3. Points (any 5)
(a) A, B, C, D, E, F, G, H (b) C, D, E, F, G, H (c) P, Q, R, S, T, O
Line segments (any 5)
(a) AB, BC, CD, DA, EF, GH, FG, HE, AE, DH, BF, CG
(b) CD, DE, EF, FG, GH, HC, DG (c) PQ, QR, RS, ST, TP, QT, OP, OR, OS
4. (a) 12 (b) 7 (c) 6
5. (a) line PQ (b) line r (c) line l, line m (d) line AD, line BC

Worksheet 1

1. Infinite 2. Only one
3. • (a) (d) and (f) are intersecting lines • (b), (c), (e) are parallel lines
4. (a) Curved (b) Plane (c) Many
(d) Collinear points (e) Parallel (f) Intersecting
5. (a) (l, m) : (m, n) : (l, n) (b) (n, r) (c) A, B, C, D or D, E, F, G

- (d) (l, r) ; (l, t) ; (m, r) ; (m, t) ; (n, r) ; (n, t) ; (r, t) (Any 4) (e) B (f) D
6. (a) one (b) three
8. (a) (n, m, r) (b) (A, F, B) ; (A, E, C) ; (A, G, D) ; (B, D, C) ; (C, G, F) ; (B, G, E)
(c) (p, q, r) (d) C (e) A, B, C, D, E, F, G (f) (p, n) (l, r)
9. (a) (AD, BD, DC) ; (BA, BD, BC) (b) A

Brain Teasers

1. A. (a) (iii) (b) (iv) (c) (i) (d) (ii) (e) (iv)
B. (a) ball, globe (b) collinear points (c) No
(d) lines of copy; adjacent sides of blackboard
(e) point of intersection
2. (P, R, S) ; (T, S, Q)
3. (a) (l, m) ; (m, n) ; (l, n)
(b) (l, p) ; (l, q) ; (l, r) ; (m, p) ; (m, q) ; (m, r) ; (n, p) ; (n, q) ; (n, r) ; (l, q) ; (p, q) ; (p, r) [Any four]
(c) (l, q) (d) (l, r)
(e) (A, B, C, G) ; (G, H, I, J, K) ; (D, E, J, F) ; (A, H, D) ; (B, I, E) ; (C, F, K) [Any 3 sets]
(f) (i) J (ii) H
4. Minimum – 0, Maximum – 3
5. (a) False (b) False (c) True (d) False (e) False (f) True (g) True (h) False
6. (a) Point (b) Plane (c) Intersecting (d) Plane (e) Parallel

HOTS

2. (a) 15 line segments
(b) (i) EA, EB, EC, ED, EF
(ii) CA, CB, CD, CE, CF

Enrichment Questions

- (a) 5 pairs (b) AE, ID, GB, HC
(c) (i) (AB, AE) (ii) (IG, HC)
(d) (i) E (ii) G
(e) (l, H, G) ; (H, F, C)

CHAPTER 9 – LINE SEGMENTS

Do You Remember?

1. (a) 6 ; PQ, PR, PS, QR, QS, SR (b) 7 ; AE, AD, AC, AB, BC, CD, DE
2. 6 ; PQ, QR, RS, SP, PR, SQ

Worksheet 1

1. (a) > (b) = (c) < 5. CB = 4.3 cm

Value Based Question

1. (a) 8 cm
(b) Sharing, caring for friends

Brain Teasers

1. A. (a) (ii) (b) (iv) (c) (i) (d) (iii) (e) (ii)
B. (a) (i) AC (ii) AE (iii) ED (iv) EB
2. 14, AB, BC, CD, DF, FH, HA, AF, BD, HG, CE, AG, GF, BE, ED (any 4)

5. Perimeter of square 8 cm
Perimeter of equilateral triangle 4.5 cm + constr. (a), (b)

HOTS

1. 10
2. (i) Yes (ii) Yes (iii) No (iv) No

CHAPTER 10 – ANGLES

Do You Remember?

1. (a) R : RQ, RP (b) M : MN, ML (c) X : XY, XZ
3. (a) Right (b) Straight (c) Obtuse (d) Acute (e) Right
5. (a) 3, $\angle COB$, $\angle BOA$, $\angle COA$
(b) 8, $\angle SPQ$, $\angle SRQ$, $\angle PQR$, $\angle PSR$, $\angle PQS$, $\angle RQS$, $\angle PSQ$, $\angle QSR$
6. (a) right (b) 90, 180 (c) one, two (d) 2 (e) 40

Worksheet 1

1. (a) $\angle YXZ$ (b) $\angle 5$ (c) $\angle a$ (d) $\angle p$ (e) $\angle RPQ$ (f) $\angle 3$
3. Zero angle, Acute angle, Right angle, Obtuse angle, Straight angle, Reflex angle, Complete angle.
4. (a) Points Y, B, C (b) Points L, M, N, Y, B, C (c) Points X, P, A
5. (a) $\angle ABG$ (b) $\angle 4$ (c) $\angle DEG$ (d) $\angle DGE$ (e) $\angle 3$
6. (a) Yes (b) No (c) Yes (d) Yes (e) Point Q
7. (a) Straight (b) Acute (c) Right (d) Straight
8. (a) 180° , 360° (b) 4 (c) 270° (d) Reflex

Worksheet 2

1. b, d 2. $\angle BAC$, $\angle CAD$; $\angle BAC$, $\angle CAE$; $\angle CAD$, $\angle DAE$; $\angle EAD$, $\angle DAB$
3. No, because they do not have a common vertex
4. (a) Supplementary (b) Complementary (c) Supplementary
(d) Complementary (e) Supplementary (f) Supplementary
(g) Complementary (h) Complementary
5. (a) 70° (b) 35° (c) 19° (d) 84° (e) $\left(30\frac{1}{2}\right)^\circ$ (f) 29.5
6. (a) 70° (b) 98° (c) 148.5° (d) 0° (e) 83.5° (f) 80°
8. 8 pairs, $\angle 1$, $\angle 2$; $\angle 1$, $\angle 4$; $\angle 4$, $\angle 3$; $\angle 2$, $\angle 3$; $\angle 5$, $\angle 6$; $\angle 8$, $\angle 7$; $\angle 5$, $\angle 8$; $\angle 6$, $\angle 7$ (Any 4)
9. Acute
10. (a) $\angle a$, $\angle c$; $\angle b$, $\angle d$ (b) $\angle 1$, $\angle 5$; $\angle 2$, $\angle 6$; $\angle 3$, $\angle 7$; $\angle 4$, $\angle 8$ 11. b, c
12. (a) $\angle AOB$, $\angle BOC$ (b) $\angle DOC$, $\angle COA$; $\angle AOB$, $\angle BOD$
13. (a) $\angle 5$, $\angle 6$ (b) No (c) $\angle 1 + \angle 3$, $\angle 5$ (d) Yes
14. (a) False (b) True (c) True (d) False (e) False (f) True (g) True
15. (a) 140° (b) 43° (c) 110° (d) 120°

Value Based Questions

1. (a) $\angle 1$ is obtuse, $\angle 2$ is right, $\angle 3$ is obtuse
(b) keep body fit and healthy, etc.

Brain Teasers

1. A. (a) (iii) (b) (iv) (c) (ii) (d) (iii) (e) (iv)
B. (a) 90° (b) Points S, P (c) Obtuse (d) 95° (e) 320°
2. (a) 60° (b) 150° (c) 48° 3. $\angle a$, $\angle YXZ$, $\angle MXN$, $\angle YXN$, $\angle NXY$, $\angle MXZ$

4. (a) A (b) $\angle DAC$ (c) $\angle BAD$ (d) AC (e) adjacent
5. 360°
6. (a) No (b) No (c) Yes (d) Yes (e) No
7. (a) 360° (b) $\angle 7$ (c) $\angle 1$ (d) $\angle 5$ or $\angle 3$ (e) 40°
8. (a) 180° (b) 180, 360 (c) Complete (d) Straight, 180° (e) 89.5°

HOTS

1. South
2. 30°

CHAPTER 11 – TRANSVERSAL AND PAIRS OF LINES

Worksheet 1

- (c), (f)

Worksheet 2

1. (a) $\angle g, \angle e$ (b) $\angle f, \angle h$ (c) $\angle c, \angle d, \angle e, \angle f$ (d) $\angle a, \angle b, \angle g, \angle h$
2. (a) $(\angle 1, \angle 5); (\angle 2, \angle 6); (\angle 4, \angle 8); (\angle 3, \angle 7)$
(b) $(\angle 3, \angle 5); (\angle 2, \angle 8)$
3. No, it is a linear pair

Worksheet 3

1. (a) $AB \parallel DE$ (b) $AB \parallel ED, EF \parallel BC, DC \parallel AF$
(c) $GF \parallel BC, FE \parallel GA, ED \parallel BC, DC \parallel GA, DC \parallel EF, ED \parallel GF$
(d) $EF \parallel CB, FD \parallel AC, ED \parallel AB$
3. No, because the perpendicular distance between them is not same everywhere.

Brain Teasers

1. A. (a) (i) (b) (iii) (c) (iv) (d) (ii) (e) (iv)
B. (a) $ED \parallel FH, GC \parallel AB$ or any other (b) FA, FB, DC
(c) Two pairs (d) $DA \perp AB, CB \perp AB$ or any other (e) $\angle 6$
2. (a) $BA \parallel CD$ (b) $AD \parallel EH \parallel FG \parallel BC$
3. Alternate angles: $\angle 2$ and $\angle 3, \angle 1$ and $\angle 4$. Corresponding angles: $\angle 1$ and $\angle 3, \angle 2$ and $\angle 4$
4. (a) $\angle a$ (b) $\angle h$ (c) $\angle g$ (d) $\angle h$
5. (a) (i) $\angle 5$ (ii) $\angle 6$ (b) (i) $\angle 6$ (ii) $\angle 8$

CHAPTER 12 – TRIANGLES

Worksheet 1

2. (a) 3 (b) 5 (c) 8 (d) 8
3. (a) Right (b) Obtuse (c) Acute (d) Acute
4. No, Because sum of angles is not equal to 180°
5. (a) Yes (b) No
6. $50^\circ, 90^\circ$
7. 95° , obtuse angled triangle
8. (a) True (b) False (c) True (d) True (e) False

Worksheet 2

1. (a) P (b) PR (c) PQ (d) R
3. The interior of a triangle, together with the triangle is called triangular region.

4. (a) $\triangle ABC, \triangle ADC, \triangle ADB, \triangle BCD, \triangle AOB, \triangle AOD, \triangle BOC, \triangle DOC$
 (b) $\triangle AOD, \triangle DOC, \triangle BOC, \triangle BCD, \triangle ADC$ (c) $\triangle AOB, \triangle ABC, \triangle ADB$
 5. (a) $\triangle ABC, \triangle ABF, \triangle AFC, \triangle ADE, \triangle AEC, \triangle ADF, \triangle ADC$ (Any 2)
 (b) $\triangle ABC, \triangle BDF, \triangle BDC, \triangle BFA$ (Any 2)
 (c) $\triangle EAC, \triangle EDF, \triangle EFC, \triangle EDA$ (Any 2) (d) $\triangle DEF, \triangle ADF, \triangle DFB, \triangle DFC$ (Any 2)
 (e) $\triangle BCA, \triangle BCD$ (f) $\triangle AEC, \triangle AED$

Worksheet 3

1. $\angle 4, \angle 5, \angle 6$
 2. (a) $\angle PRS : \angle PRQ : \angle P, \angle Q$ (b) $\angle VZY : \angle XZY : \angle X, \angle Y$ (c) $\angle DAC : \angle CAB : \angle C, \angle B$
 3. (a) $\angle 2$ and $\angle 3$ (b) $\angle 2$ (c) $\angle 4$ (d) $\angle 1$ and $\angle 3$ (e) $\angle 1$

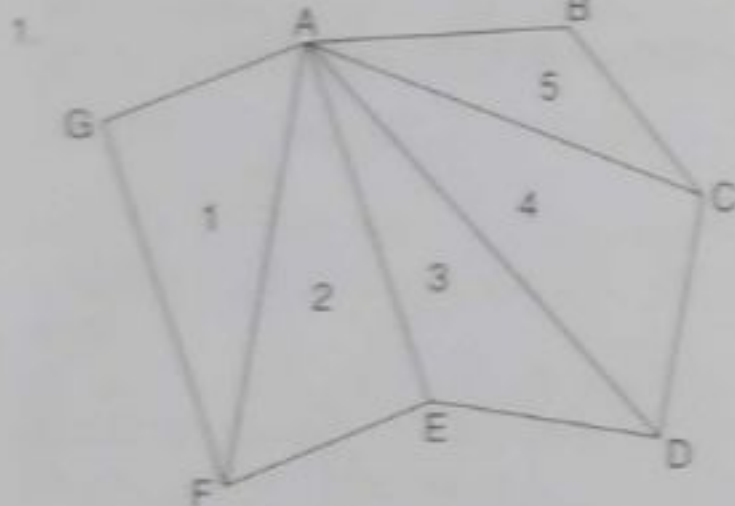
Brain Teasers

1. A. (a) (iv) (b) (iii) (c) (i) (d) (iii) (e) (ii)
 B. (a) R (b) 5 (c) equilateral
 (d) No, because sum of 2 line segments (5 cm, 7 cm) is equal to the third line segment (12 cm)
 (e) $\angle CBY$
 2. We get eight triangles
 3. (a) $\triangle APT, \triangle OAT, \triangle OPQ, \triangle OPT, \triangle AQS, \triangle QSR, \triangle AQR, \triangle PTQ$ (Any two)
 (b) $\triangle OTA, \triangle OPT, \triangle OAQ, \triangle OPQ$ (Any two) (c) $\triangle OPT, \triangle QPT, \triangle APT$ (Any two)
 (d) $\triangle QTR, \triangle QSR, \triangle QAR$ (Any two) (e) $\triangle APQ, \triangle ATQ, \triangle ASQ, \triangle ARQ, \triangle AOQ, \triangle APQ, \triangle AOT$ (Any two)
 4. (a) Vertices (b) AB (c) Y (d) Acute angles (e) 60

HOTS

1. 360°
 2. $x = 50^\circ ; y = 45^\circ$

Enrichment Questions



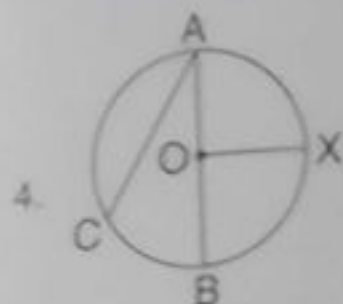
$$5 \times 180^\circ = 900^\circ$$

2. 52°

CHAPTER 13 - CIRCLES

Worksheet 1

1. Bangle, One rupee coin, Brim of a glass tumbler
 2. Centre $\rightarrow C$, Radii $\rightarrow CA, CB, CD$
 3. Radii $\rightarrow OP, OQ, OR, OS$; Diameter $\rightarrow SQ, PR$; Chords $\rightarrow PR, QS, QR, RS, PS, PQ$



4.

5. (a) Chords (b) Diameter / Chords (c) Radii

6. (a) 8 cm (b) 6.2 cm (c) 9.2 cm (d) 10.8 cm (e) 42 cm
 7. (a) 4 cm (b) 3.5 cm (c) 3.2 cm (d) 5.7 cm (e) 13 cm
 8. (a) Point O (b) 4 (c) BE or AC (d) BD, AC, BE, AB, DE (e) CEA
 9. (a) True (b) False (c) True (d) False (e) True

Worksheet 2

2. (a) radius = 3 cm (b) radius = 4 cm (c) radius = 4.2 cm (d) radius = 2.7 cm 3. 8 cm

Brain Teasers

1. A. (a) (iii) (b) (iii) (c) (i) (d) (ii) (e) (i)
 B. (a) 4 cm (b) 2 cm (c) 5 cm (d) 8 cm (e) OA, OB, OC
 3. 8.4 cm 4. The circles just touch each other. 5. The circles intersect each other at two points.
 6. (a) False (b) False (c) True (d) True (e) True
 7. (a) BG, CD (b) 6 (c) OC, OB, OD, OG (Any three) (d) arc GCA, arc EGC (e) BAG
 (f) No (g) No

HOTS

1. 12.5 cm 2. 16 cm

CHAPTER 14 – CONSTRUCTIONS

Worksheet 1

2. Each equal part is of 3.5 cm 3. Yes

Worksheet 2

2. Yes

Worksheet 4

3. Yes

Brain Teasers

1. (a) (ii) (b) (iii) (c) (iv) (d) (ii) (e) (iv)

CHAPTER 15 – PERIMETER AND AREA

Do You Remember Perimeter?

1. (a) 8.5 cm (b) 13.5 cm (c) 16 cm (d) 14 cm 2. (a) 110 m (b) 62 m (c) 120 cm (d) 139 cm
 3. (a) 60 cm (b) 692 cm (c) 10 m (d) 8.24 m 4. 16.2 cm 5. 106 cm

Do You Remember Area?

1. (a) Envelope (b) Blackboard (c) 500 rupee note (d) School ground
 2. (a) 1440 cm^2 (b) 625 cm^2 (c) 2.25 m^2 or 22500 cm^2
 3. (a) 324 cm^2 (b) 272.25 cm^2 (c) 156.25 m^2
 4. 864 m^2 5. 243.36 cm^2

Worksheet 1

1. ₹ 9,000 2. 264 m 3. ₹ 1,800 4. Manu by 50 m 5. ₹ 87.36
6. 27 m^2 , ₹ 1,215 7. 17.64 m^2
8. Area of first playground is bigger

Worksheet 2

1. 10 cm 2. 100 m 3. 18 m 4. 60 m 5. 23.88 m

Value Based Questions

1. (a) 240 cm (b) 28 cm (c) Team work, etc.
2. (a) ₹ 22,500 (b) Caring for environment

Brain Teasers

1. A. (a) (ii) (b) (i) (c) (ii) (d) (i) (e) (iii)
B. (a) 8 (b) 6 cm (c) 30 cm (d) 96 sq cm (e) 400 cm or 4 m
2. Area of square is larger by 345 sq. cm.
3. (a) Area increases 4 times (b) Area becomes one-fourth
4. 26 cm 5. 2 cm 6. 400 tiles 7. 144 m^2 8. $X \rightarrow D \rightarrow C \rightarrow A$

HOTS

1. 240000 tiles 2. (i) $l = b = 5 \text{ cm}$ (ii) $l = 9 \text{ cm}$, $b = 1 \text{ cm}$

CHAPTER 16 – STATISTICS

Do You Remember?

3. (a) 160 Science books (b) Science and English (c) 640 books
(d) 280 books (e) 20 books more

Worksheet 1

1. (a) 300 students (b) 450 students (c) 2001–2002, 2002–2003
(d) 2004–2005, 500 students
2. (a) The marks obtained by Neha in different subjects in her annual examination
(b) Mathematics
(c) (i) 60 marks (ii) 90 marks
(d) Hindi and General Science
(e) 330 marks

Value Based Questions

1. (b) Helpful, Caring, etc.
2. (b) Caring for the environment

HOTS

- (a) The production of rice and wheat in different states of India. (b) West Bengal (c) U.P. (d) 50%
(e) West Bengal and Madhya Pradesh

The End